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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/582,997 | 06/08/2007 | Peter Larsson | JRL-2380-1204 | 6970 |

23117 7590 06/12/2009

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| EXAMINER | |
|---|---|
| NGUYEN, LEON VIET Q | |
| ART UNIT | PAPER NUMBER |
| 2611 | |

| MAIL DATE | DELIVERY MODE |
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| 06/12/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/582,997 | LARSSON ET AL. | |
| | Examiner | Art Unit | |
| | LEON-VIET Q. NGUYEN | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/14/06, 6/8/07, 2/20/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement (IDS) submitted on 2/20/09 was filed after the mailing date of 2/20/09. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**2. Claims 1, 2, 4, 6-9, 11, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al (US20040082356).**

Re claim 1, Walton teaches a communication method for use in a communication network involving several user terminals (120x-120y in fig. 7) communicating with at least one transmitter node (110x in fig. 7), said transmitter node comprising a plurality of antennas (724a-724d in fig. 7), each of said user terminals comprising at least one antenna (752a-752d in fig. 7), said method being characterized by;

selecting a first set of user terminals comprising at least one user terminal (120y in fig. 7),

selecting a second set of user terminals not comprised in the first set (120x in fig. 7),

adapting first communication parameters for the first set of user terminals (¶0493-¶0496, spatial multiplexing is interpreted to be a first type of communication parameter), according to a first principle suitable for optimizing communication with the first set of user terminals (¶0469, the user terminal performs singular value decomposition. It would be obvious to perform SVD on terminal 120x),

adapting second communication parameters (¶0553, diversity is interpreted to be a second type of communication parameter) for the second set of user terminals (120y in fig. 7) according to a second principle which is different from the first principle (¶0553, it would be obvious that user terminal 120y perform in diversity mode), in response to communication parameters selected by the first set (it would be obvious to change the second communication parameters after first communication parameters),

transmitting to the first set of user terminals according to the first communication parameters and to the second set of user terminals according to the second communication parameters (¶0217, each user terminal 120 receives downlink signals).

Although Walton does not explicitly teach that each set of user terminals has communication parameters adapted according to respective principles, Walton does teach that spatial multiplexing mode can only be used within a multi-antenna user terminal (Table 2, 120y in fig. 7) whereas diversity mode can be used within a single-antenna user terminal (Table 2, 120x in fig. 7). One of ordinary skill in the art would

have found it obvious to use a various number of antennas in each user terminal, effectively using different communication parameters for each terminal, based on cost considerations, safety issues and other factors (¶0052).

Re claim 2, Walton teaches a method wherein the first principle involves optimization with respect to full or partial Channel State Information (¶0299), for example by Singular Value Decomposition (¶0469).

Re claim 4, Walton teaches a method wherein the first communication parameters (¶0296) are related to the transmit power (¶0296) and the beamforming matrix at the transmitter side (¶0332).

Re claim 6, Walton teaches a method comprising the step of selecting the first set of user terminals in dependence of CSI knowledge (¶0217).

Re claim 7, Walton teaches a method comprising the step of selecting the first set of user terminals (120x and 120y in fig. 7) in dependence of receiver antenna

configuration (¶0060, it would be obvious to select either the single or multi antenna user terminals).

Re claim 8, the claimed limitations recited have been analyzed and rejected with respect to claim 1. It would be necessary to have an apparatus to perform the method as claimed in claim 1.

Re claim 9, the claimed limitations recited have been analyzed and rejected with respect to claim 2.

Re claim 11, the claimed limitations recited have been analyzed and rejected with respect to claim 4.

Re claim 13, the claimed limitations recited have been analyzed and rejected with respect to claim 6.

Re claim 14, the claimed limitations recited have been analyzed and rejected with respect to claim 7.

Re claim 15, Walton teaches a MIMO based communication network involving several user terminals (120x-120y in fig. 7) communicating with at least one transmitter node, said transmitter node comprising a plurality of antennas (110x in fig. 7), each of said user terminals comprising at least one antenna (752a-752d in fig. 7, characterized in that said at least one transmitter node is a transmitter node according to claim 8 (724a-724d in fig. 7).

**3. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al (US20040082356) in view of Dong et al ("Opportunistic transmission scheduling for multiuser MIMO systems" IEEE International Conference on Acoustics, Speech, and Signal Processing, 2003. Proceedings. (ICASSP '03), Publication Date: 6-10 April 2003, Volume: 5, On page(s): V-65-8).**

Re claim 3, Walton fails to teach a method wherein the second principle makes use of opportunistic MIMO communication.

However Dong teaches utilizing a principle which makes use of opportunistic MIMO communication (page V-66 left side last paragraph, multi-user diversity).

Therefore taking the combined teachings of Walton and Dong as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the step of Dong into the method of Walton. The motivation to combine Dong and Walton would be to maximize total system capacity (page V-66 right side third paragraph of Dong).

Re claim 10, the claimed limitations recited have been analyzed and rejected with respect to claim 3.

**4. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al (US20040082356) in view of Balachandran et al (US20040208183).**

Re claim 5, Walton fails to teach a method comprising the step of selecting the first set of user terminals in dependence of traffic and quality of service parameters.

Balachandran teaches selecting user terminals in dependence of traffic and quality of service parameters (¶0056).

Therefore taking the combined teachings of Walton and Balachandran as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the step of Balachandran into the method of Walton. The motivation to combine Balachandran and Walton would be to maximize user satisfaction (¶0021).

Re claim 12, the claimed limitations recited have been analyzed and rejected with respect to claim 5.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/
Examiner, Art Unit 2611

/Mohammad H Ghayour/
Supervisory Patent Examiner, Art Unit 2611